

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: :
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Lars-Berno Fredriksson :
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Serial No.: To be assigned : Art Unit: To be assigned
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Filed: Herewith : Examiner: To be assigned
:
For: DEVICE IN A SYSTEM : Atty Docket: 0260/00071
OPERATING A CAN- :
PROTOCOL AND IN A :
CONTROL AND/OR :
SUPERVISION SYSTEM :

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to initial examination of the above-identified divisional application, please amend the case as follows:

IN THE SPECIFICATION

Kindly amend the specification as follows:

On page 1, before the first sentence, insert the section:

-- Cross References to Related Applications

The present application is a divisional of U.S. patent application Serial No. 09/101,748, filed July 17, 1998.--.

IN THE CLAIMS

Please cancel claims 1-10 and 28-40, without prejudice or disclaimer, and amend the remaining claims to read as follows:

11. (Amended) A device in a system, comprising:

a number of machines that each have a radio communication means for communicating with another of said radio communication means, each machine having a number of modules interconnected by a digital serial connection that communicate with one another using a CAN-system protocol (standard ISO 11898);

a key allocation means for determining which of said machines may communicate through a particular instance of a message channel established between a subset of said machines and a master control system or between a subset of said machines alone, said key allocation means dynamically assigns each of said machines, within the subset of machines assigned to a message channel, a unique identification during each instance of an established message channel; and

said master control system includes said key allocation means and each of said modules either includes said key allocation means or is capable of adopting an assigned identification from said key allocation means, wherein

said identification is based not upon the real identity of said machine, but is dynamically assigned during a communicative coupling between said master control system and said module within said machine or between a plurality of modules in separate machines, and

said modules in any particular machine have unique identities and the unique identity of a particular module or the unique identities of multiple modules in the machine form(s) the identity/identities for said particular machine's radio communication means.

12. (Amended) Device according to claim 11, wherein the respective module concerned is arranged such that a key-allocation-performing function is built into the module and/or is assignable to the module from a master system or systems.

13. (Amended) Device according to claim 11, wherein the modules in the CAN-system of a particular unit have unique identities, and in that the unique identity/identities of one or more modules in the CAN-system forms the identity/identities for particular radiocommunication-performing equipment.

14. (Amended) Device according to claim 11, characterized in that a particular machine comprises a radio module, forming part of the machine's radio communication means, the machine can detect when the radio module is connected or activated, and the machine's radio communication means adopts the identification of another particular module in the machine.

15. (Amended) Device according to claim 11, characterized in that the key allocation means allocates a public key identification, common to machines incorporated within an area, or a unique key identification, which therefore is based upon the identity of a particular module forming part of the machines which communicate by radio among themselves.

16. (Amended) Device according to claim 11, wherein the assignment of identifications is carried out by a system node selected within the device, which system node is aware of all nodes forming part of the device and in which no node can be connected or exchanged or work within the device without the consent or knowledge of the system node.

17. (Amended) Device according to claim 16, wherein the system node determines network key identifications, and a required hopping scheme or spread code in the radiocommunications.

18. (Amended) Device according to claim 16, characterized in that where there is both a machine and a remote control unit intercommunicating, the system node in the machine determines a common key identification for both the machine and the remote control unit.

19. (Amended) Device according to claim 11, wherein the network key identifications can be distributed exclusively, alternatively or as a supplement from a superordinate level, via a common communication channel, for a number of machines and remote control units, an area-common unit having complete information on the identities of all machines and remote control units within a particular area and the radiocommunication equipment ending up at a low level from the device viewpoint and being able to be exchanged without any security risks.

20. (Amended) Device according to claim 18, wherein a number of remote control units control a common machine, and a particular control command from a particular remote control unit is assignable or receivable in an identification device (bit pattern) in the controlled common machine, which identification device is disposed in the system node of the controlled machine.

21. (Amended) Device according to claim 20, wherein the control command can be received with the aid of a network key assigned to the controlling unit, and in that the system node selects the control command of a particular remote control unit according to a predetermined set of rules, which allow the remote control units to be connected at different time stages.

22. (Amended) Device according to claim 11, wherein a number of machines are assignable to a number of remote control units, non-activated machines listen in on a common channel assigned to a work site, in that whenever an idle machine is assigned to a remote control unit a radio center establishes contact with the idle machine and transfers a particular identification to the remote control unit, in that whenever the remote control unit is activated the communication means of the idle machine establishes contact with the radio communication means of the selected remote control unit via the common channel and reports its identification and the fact that it is master of the connection channel, and in that an exclusive channel between the machine and the remote control unit can in this case be set up, in which exclusive channel information is transferred.

23. (Amended) Device according to claim 11, wherein the machine is arranged with radio modules (WCANM), the sole task of which is to attend to the wireless radiocommunications.

24. (Amended) Device according to claim 11, wherein a plurality of remote control units each serve their own part-area within a work area, and in that, where a mobile unit is within the area, control over the mobile unit is passed from one remote control unit to another remote control unit as it passes through a part-area border.

25. (Amended) Device according to claim 11, wherein a module comprises a CPU containing a monitoring/control unit, memories, a CAN-Controller, a CAN-driver and adjustment circuits for communication via a CAN-connection, which monitoring/control unit can be coupled together via a connector to a radio unit comprising a radio communication part and a communication part, the last-named of which comprises a CPU, memory and adjustment circuits for communication.

26. (Amended) Device according to claim 11, characterized in that where there are a plurality of machines, which are served by a control desk unit, a machine which requires action sends a message on the message channel, and in that at the control desk unit one or more items of information appear on the number of machines requiring assistance, the identity of the machines and the nature of the assistance, a selection facility being provided at the control desk unit for a choice of running order for serving the machines in need of action.

27. (Amended) Device according to patent claim 26, characterized in that where there is a supervisory function from the control desk all machines make use of the same radio message channel and when a selected machine is serviced an exclusive radio message channel is established between the selected machine and the control desk unit.

REMARKS

Claims 11-27 are pending in this divisional application. The claims have been amended to eliminate multiple dependency and to incorporate the amendments made in parent application Serial No. 09/101,748. None of these amendments is believed to involve any new matter. Accordingly, it is respectfully requested that the foregoing amendments be entered, that the application as so amended receive an examination on the merits, and that the claims as now presented receive an early allowance.

Respectfully submitted,



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AMENDMENTS TO THE CLAIMS

11. (Amended) [Device in a system of mutually separate units, e.g. machines (1101A, 1103A) at a construction site, weaving machines (803A, 804A), etc., which are intercommunicable by means of radiocommunications (115A, 116A), these being able to be set up such that message channels can be realised between two or more of the said units, and in which the radio communications operate with an identification system in which a key allocation can be realised, which in a particular connection instance enables messages to be transferred between selected units only and in which a particular unit is designed with a system operating essentially with a CAN-signal protocol (standard ISO 11898), here referred to as a CAN-system, in which functions, stimulations, readings, etc. in modules (102A, 103A, 104A) making up the unit are intercommunicable via a digital serial connection (107A), characterised in that in each connection instance the key allocation between the units is based not upon the real identity of equipment performing the radiocommunication(s) but upon identity/identities assignable to the equipment, which identity/identities are brought about during coupling by a module in the unit involved and/or from a master system or master control centre]
A device in a system, comprising:

a number of machines that each have a radio communication means for communicating with another of said radio communication means, each machine having a number of modules interconnected by a digital serial connection that communicate with one another using a CAN-system protocol (standard ISO 11898);

a key allocation means for determining which of said machines may communicate through a particular instance of a message channel established between a subset of said machines and a master control system or between a subset of said machines alone, said key allocation means dynamically assigns each of said machines, within the subset of machines assigned to a message channel, a unique identification during each instance of an established message channel; and

said master control system includes said key allocation means and each of said modules either includes said key allocation means or is capable of adopting an assigned identification from said key allocation means, wherein

said identification is based not upon the real identity of said machine, but is dynamically assigned during a communicative coupling between said master control system and said module within said machine or between a plurality of modules in separate machines, and

said modules in any particular machine have unique identities and the unique identity of a particular module or the unique identities of multiple modules in the machine form(s) the identity/identities for said particular machine's radio communication means.

12. (Amended) Device according to [patent] claim 11, [characterized in that] wherein the respective module concerned [(401.A)] is arranged such that a key-allocation-performing function is built into the module and/or is assignable to the module from a master system or systems [(1108A)].

13. (Amended) Device according to [patent] claim 11 [or 12], [characterized in that] wherein the modules in the CAN-system of a particular unit have unique identities, and in that the unique identity/identities of one or more modules in the CAN-system forms the identity/identities for particular radiocommunication-performing equipment [(e.g. 204A, 205A)].

14. (Amended) Device according to [any of preceding patent claims 11-13] claim 11, [characterised] characterized in that a particular [CAN-system] machine comprises a radio module [(204A)], forming part of the machine's radio communication means [radiocommunication (115A)-performing equipment], [and in that] the [CAN-system is arranged so as to] machine can detect when the radio module is connected or activated,

[key allocation being able to be realised from] and the machines radio communication means adopts the identification of another particular module in the machine [CAN-system belonging to the activated or connected radio module].

15. (Amended) Device according to [any of preceding patent claims 11-14] claim 11, [characterised] characterized in that the key allocation means [comprises allocation of] allocates a public key identification, common to [CAN-systems] machines incorporated within an area, or a unique key identification, which therefore is based upon the identity of a particular module forming part [of any] of the [CAN-systems] machines which communicate by radio [amongst] among themselves.

16. (Amended) Device according to [any of preceding patent claims 11-15] claim 11, [characterised in that] wherein the [key allocation] assignment of identifications is carried out by a system node [(601A)] selected within the [CAN-system] device, which system node is aware of all nodes forming part of the [CAN-system] device and in which no node can be connected or exchanged or work within the device [system] without the consent or knowledge of the system node.

17. (Amended) Device according to [any of preceding patent claims 11-17] claim 16, [characterised in that] wherein the system node determines network key identifications [keys], [the a jump plan and/or dispersion codes] and a required hopping scheme or spread code in the radiocommunications.

18. (Amended) Device according to [any of preceding patent claims 11-17] claim 16, [characterised] characterized in that where there [are units in the form of] is both a machine[, e.g. hoisting crane (1101A)] and a remote control unit [(1104A)] intercommunicating, the system node in the [CAN-system of the] machine [unit is

arranged so as to determine] determines a common key identification for both [units (1101A, 1104A)] the machine and the remote control unit.

19. (Amended) Device according to [patent] claim [18] 11, [characterised in that] wherein the network [keys] key identifications can be distributed exclusively, alternatively or as a supplement from a superordinate level, [e.g.] via a common communication channel [(1107)], [e.g. in the form of a radio channel,] for a number of machines [(hoisting cranes)] and remote control units [(1104A, 1105A, 1106A)], [the] an area-common unit having complete information on the identities of all machines and remote control units within a particular area and the radiocommunication equipment ending up at a low level from the [system] device viewpoint and being able to be exchanged without any security risks.

20. (Amended) Device according to [any of preceding patent claims 11-19] claim 18, [characterised in that] wherein [in cases where] a number of remote control units [(1104A, 1105A) are arranged so as to] control a common machine [unit (hoisting crane, weaving machine, etc.)], and a particular control command from a particular remote control unit is assignable or receivable in an identification device (bit pattern) in the controlled common [unit] machine, which identification device is [preferably] disposed in the system node of the controlled [unit] machine.

21. (Amended) Device according to [patent] claim 20, [characterized in that] wherein the control command can be received with the aid of a network key assigned to the controlling unit, and in that the system node selects the control command of a particular remote control unit according to a predetermined set of rules, which allow the remote control units to be connected at different time stages.

22. (Amended) Device according to [any of preceding patent claims 11-21] claim 11, [characterised in that] wherein a number of machines [machine units (1101A, 1102A, etc.)] are assignable to a number of remote control units, [(1104A, 1105A) allocated to various individuals, in that where there are] non-activated [machine units these are arranged so as to] machines listen in on a common channel assigned to a work site [(1107A)], in that whenever an idle machine [(e.g. 1101A)] is assigned to a remote control unit [(e.g. 1104A) (individual)] a radio [centre] center establishes contact with the idle machine and transfers [the] a particular [identity/keys] identification to the remote control unit, in that whenever the remote control unit is activated the [radio part] communication means of the idle machine establishes contact with the radio [part] communication means of the selected remote control unit via the [universal] common channel [(1107A)] and reports its [identity] identification and the fact that it is master of the connection channel, and in that an exclusive channel between the machine [unit] and the remote control unit can in this case be set up, in which exclusive channel information [on the jump plan, for example,] is transferred.

23. (Amended) Device according to [any of preceding patent claims 11-23] claim 11, [characterised in that] wherein the [CAN-system] machine is arranged with radio modules (WCANM) [(606)], the sole task of which is to attend to the wireless radiocommunications.

24. (Amended) Device according to [any of preceding patent claims 11-23] claim 11, [characterized in that] wherein a plurality of remote control units [(1104A)] each serve their own part-area within a work area, and in that, where a mobile unit is [controlled by] within the area, control over the mobile unit is passed from one remote control unit [(1104A)] to another remote control unit [(1105A)] as it passes through a part-area border.

25. (Amended) Device according to [any of preceding patent claims 11-24] claim 11, [characterized in that] wherein a module comprises a CPU containing a monitoring/control unit [(401A)], memories, a CAN-Controller [(404A)], a CAN-driver [(405A)] and adjustment circuits [(406A)] for communication via a CAN-connection [(407A)], which monitoring/control unit can be coupled together via a connector [(416A)] to a radio unit comprising a radio communication part [(408A)] and a communication part [(409A)], the last-named of which comprises a CPU [(410A)], memory [(411A)] and adjustment circuits [(412A)] for communication.

26. (Amended) Device according to [any of preceding patent claims 11-25] claim 11, [characterised] characterized in that where there are a plurality of machines, [e.g. weaving machines (803A),] which are served by a control desk unit [(808A)], a machine which requires action sends a message on the [wireless network/radiocommunication network] message channel, and in that at the control desk unit [(808A)] one or more items of information appear on the number of machines requiring assistance, the identity of the machines and the nature of the assistance [action, etc.], a selection facility being provided at the control desk unit for a choice of .running order for serving the machines in need of action.

27. (Amended) Device according to patent claim 26, [characterised] characterized in that where there is a supervisory function from the control desk [(808A)] all machines make use of the same radio message channel and when a selected machine is serviced an exclusive radio message channel is established between the selected machine and the control desk unit.